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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,234	01/16/2002	Duc Chau	40013.003	9589
27966	7590	04/20/2005	EXAMINER	
KENNETH E. HORTON KIRTON & MCCONKLE 60 EAST SOUTH TEMPLE SUITE 1800 SALT LAKE CITY, UT 84111			GARCIA, JOANNIE A	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/052,234

Applicant(s)

CHAU ET AL.

Examiner

Joannie A. Garcia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-17 and 22-24 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03-03-05</u>  | 6) <input type="checkbox"/> Other: _____                                    |

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al (U.S. Patent 5,508,534).

Nakamura et al discloses providing a semiconductor substrate 4 with an upper surface, the substrate having trench 13 therein (Figure 2, and Column 11, lines 33-38), providing a gate oxide layer 14 on a bottom and sidewall of the trench (Figure 2, and Column 11, lines 39-44), providing a conductive layer 5, such as polysilicon, on a bottom and sidewall of the gate oxide layer (Figure 2), the conductive layer having an upper surface below the upper surface of the substrate (Figure 2), providing a self-aligned isolation cap 12/10 on the conductive layer within the trench, the isolation cap comprising a combination of dielectric materials with different etching rates, or a non-organic dielectric material, such as silicon oxide and BPSG, including providing the self-aligned isolation cap by providing a first dielectric layer 12, providing a second dielectric layer 10 over the first dielectric layer, flowing and reflowing the second dielectric layer, and then anisotropically etching the first and second dielectric layers until the upper substrate surface is exposed (Figures 8 and 9, and Column 13, lines 23-32, and 50-67).

Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Nishihara (5,541,425).

Nishihara discloses providing a semiconductor substrate 3 with an upper surface, the substrate having a trench therein (Figure 3), providing source and channel regions proximate the trench (Figure 3, Column 11, lines 5-8, Column 23, lines 42-44, and 55-58, and Column 24, lines 1-2), providing a gate oxide layer 7 on a bottom and sidewall of the trench (Figure 3), providing a conductive layer 8 on a bottom and sidewall of the gate oxide layer (Figure 3), the conductive layer having an upper surface below the upper surface of the substrate (Figure 3), providing a self-aligned isolation cap 9 on the conductive layer within the trench, the isolation cap comprising a non-organic dielectric material (Figure 3, and Column 10, lines 62-67).

Claims 7-17, and 22-24, are allowed.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joannie García whose telephone number is (571) 272-1861. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



George Fourson  
Primary Examiner  
Art Unit 2823



JAG  
April 14, 2005

GFourson  
Primary Examiner